Multipotent Cardiovascular Progenitor Regeneration of the Myocardium after MI

Grant Award Details

Multipotent Cardiovascular Progenitor Regeneration of the Myocardium after MI

Grant Type: Quest - Discovery Stage Research Projects

Grant Number: DISC2-10110

Project Objective: To evaluate the retention and distribution of MCPs transplanted into the heart after MI, and determine the safety and efficacy of MCP therapy for improving LV function and survival after ischemic injury to the heart.

Investigator:

Name:	Mark Mercola
Institution:	Stanford University
Type:	PI

Disease Focus: Heart Disease

Human Stem Cell Use: iPS Cell

Award Value: $1,809,234

Status: Active

Grant Application Details

Application Title: Multipotent Cardiovascular Progenitor Regeneration of the Myocardium after MI

Public Abstract:

Research Objective

We developed technology to reproducibly prepare large numbers of bonafide cardiac progenitor cells from patient iPSCs. We propose the first test of these cells as a therapy for myocardial infarction.

Impact

Heart failure resulting from myocardial infarction is responsible for 13% of human mortality (WHO statistic). This proposed therapy is to restore the loss of heart cells that lead to heart failure.

Major Proposed Activities

- Perform cell labeling, biobanking and in vitro characterization of Multipotent Cardiovascular Progenitor cells (MCPs), including quality control of batches for subsequent activities.
- Phase 1: Deliver the Multipotent Cardiovascular Progenitor cells (MCPs) into pig hearts after infarction/reperfusion. Use 19F magnetic resonance imaging (MRI) to measure retention and distribution.
- Phase 2: Using the conditions determined in Phase 1, monitor animals for 3 months to assess safety & efficacy for improving heart function & survival. Histology at termination to assess regeneration.
- Summarize the results into a preclinical package, in anticipation of translating the research into a cell-based therapy for myocardial infarction

Statement of Benefit to California:

Heart disease accounts for 25% of deaths in California, making it the #1 cause of death (2014, American Heart Association). Over 3% of Californians have had a heart attack, but with 60% obesity this number will likely increase. The research investigates a curative therapy based on cell transplantation of bonafide cardiac progenitors. Benefits likely to accrue therefore are 1) improved health of our population, and 2) stimulation of biotechnology to produce, market and deliver the therapeutic.
